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EXAMINER

JONES, SCOTT E

ART UNIT

PAPER NUMBER

3713

DATE MAILED: 03/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/896,150

Applicant(s)

PAUL ET AL.

Examiner

Scott E. Jones

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 June 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to because figures 3 and 7 are illegible. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

2. Claims 7 and 8 are objected to because of the following informalities: The examiner suggests that the transitional phrase “further enabling” be changed to “further comprising” or “further including the step”, etc. Furthermore, the term “enabling” only provides for a “possibility” that a match in color is performed.
3. In Claim 11, line 2, the examiner interprets the term “loc” to be “location.”  
Correction is required.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. Regarding Claim 1, lines 3 and 4, the claim language, “comparing visual characteristics from scene to scene center to determine movement of the user’s head within the scene” is unclear. More than one “scene” is recited in the claim. Therefore, it is unclear what scene

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applicant is referring to when reciting "determining movement of the user's head within the scene."

Claims 2-13 inherit the deficiency of claim 1 by dependency.

7. Regarding Claim 4, line 2, the claim language, "characteristics to yield an estimate of head position." is unclear. It is not clear where/what the estimate of head position takes place.

8. Claim 5 recites the limitation "the head tracking" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Claim 6 inherits the deficiency of claim 5 by dependency.

9. Claim 6 recites the limitation "the screen" in line 2. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1-9, and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Holliman et al. (U.S. 6,075,557).

Holliman et al. discloses an image tracking system for computer games which is configured to present a sequence of images, determine the position of a target image in a previous presented image in the sequence, determine the movement of the target image between the previously presented image and the subsequently presented image in the sequence as the

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determined position modified by the determined movement providing a rapid indication of the position and motion of the target (such as a user's head). Holliman et al. additionally discloses:

Regarding Claim 1:

- imaging a sequence of scenes including the head of a user of the computer (Figures 8 and 13, and Column 11, line 58-Column 12, line 2);
- comparing visual characteristics from scene to scene center to determine movement of the user's head within the scene (Column 7, lines 35-47);
- controlling the game in accordance with the movements (Column 1, lines 5-12).

Regarding Claim 2:

- the visual characteristics include color, shape, or location (Figures 8 and 13, and Column 11, line 58-Column 12, line 2).

Regarding Claim 3:

- the visual characteristics include a combination of static and dynamic characteristics. Although not explicitly disclosed, Holliman et al. inherently has each of these features. For example, the object tracked (user's head) moves and is dynamic, whereas, the background features like a wall or bookcase does not move and is static.

Regarding Claim 4:

- the step of modeling of the dynamic characteristics to yield an estimate of head position (Figures 8 and 13, and Column 11, line 58-Column 12, line 2).  
Furthermore, as noted above, although not explicitly disclosed, Holliman et al. inherently has each of these features. For example, the object tracked (user's

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head) moves and is dynamic, whereas, the background features like a wall or bookcase does not move and is static.

Regarding Claim 5:

- the step of initiating the head tracking through a graphical user interface (Figure 1 (7)).

Regarding Claim 6:

- the graphical user interface provides a bounding box displayed on the screen to assist in targeting the user's head (Figures 13, 19, and 21).

Regarding Claim 7:

- further enabling a match in color despite differences arising from lighting and shadows (Column 11, line 58-Column 12, line 2).

Regarding Claim 8:

- further enabling a match in color within a threshold of hue (Figures 25-26, and Column 19, lines 1-67).

Regarding Claim 9:

- the step of comparing the visual characteristics includes a comparison of pixels from scene to scene (Figure 21, and Column 13, line 48-Column 14, line 42).

Regarding Claim 12:

- the step of segmented a region defined by a predetermined closeness of color as an estimate of target shape (Column 11, line 58-Column 12, line 2).

*Claim Rejections - 35 USC § 103*

12. Claims 10-11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holliman et al. (U.S. 6,075,557) in view of Birchfield.

Holliman et al. discloses that as discussed above regarding claims 1-9 and 12. One could argue that Holliman et al. would determine whether a user's head has moved outside of the scene since a user's head is being tracked. Furthermore, Holliman et al. discloses objects, such as a user's eyes, are tracked based on color. However, Holliman et al. seems to lack explicitly stating:

Regarding Claim 10:

- the step of determining if the user's head has moved outside the scene.

Regarding Claim 11:

- the step of finding a weighted average of color to compute the location based upon action of the user's head based on color alone.

Regarding Claim 13:

- the step of continuing to track the user's head when moving in front of or behind a similarly colored object in the scene.

Birchfield's Elliptical Head Tracking Using Intensity Gradients and Color Histograms technical paper teaches of reliable visual method and system for tracking an object, such as a user's head, in a complex environment using different criterion, such as shape and color. Birchfield and Holliman et al. are analogous art because both are systems that utilize computers to track a user's head. Furthermore, Birchfield teaches:

Regarding Claim 10:

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- the step of determining if the user's head has moved outside the scene (Figure 3a).

Regarding Claim 11:

- the step of finding a weighted average of color to compute the location based upon action of the user's head based on color alone (Page 2, Column 2-Page 3, Column 1).

Regarding Claim 13:

- the step of continuing to track the user's head when moving in front of or behind a similarly colored object in the scene (Figure 6).

It would have been obvious to one having ordinary skill in the art, at the time of the applicant's invention, to incorporate Birchfield's head tracking system in Holliman. One would be motivated to do so because Birchfield provides for a robust head tracking system that is accurate enough to actively control the camera's pan, tilt, and zoom for long periods of time in order to keep the user's head in the field of view at a desired size.

### ***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Steffens et al. '370, Marrin et al. '257, Kage '977, Maurer et al. '231, Yoshioka et al. '053, and Freeman '043 disclose object tracking systems and methods.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott E. Jones whose telephone number is (703) 308-7133. The examiner can normally be reached on Monday - Friday, 8:30 A.M. - 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Valencia Martin-Wallace can be reached on (703) 308-4119. The fax phone



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numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.

SEJ

sej

March 11, 2003

*V. Martin-Wallace*  
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